EXPLORATIONS

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CONTENTS

Editor: MARSHALL MCLUHAN

Changing Perceptions from the Pictorial to the Iconic — HARLEY PARKER
Architecture and the Corporate Image — ALLEN BERNHOLTZ
Australopithecus and the Electronic Brain — WILFRED WATSON
The University in the Electric Age: The End of the Gap Between Theory and Practice — MARSHALL MC LUHAN

CHANGING PERCEPTIONS FROM THE PICTORIAL TO THE ICONIC

Harley Parker

There is no assumption more prejudicial to an understanding of media than the one which equates the content of a medium with its quality. I am not suggesting that there is no hierarchy of values that exists in relation to content, but rather, that any medium has the power to re-structure the recipient mind in a unique way. This it does by imposing the method of organization inherent in the particular medium upon our mental processes and thereby dictating our sensory response. For example, the man who has been educated by the book thinks differently than the man who has learned by the oral processes. I don't mean only that he thinks different thoughts, but rather that he organizes his thoughts and his sensory responses differently. This is the theme which was extensively explored in *Preface to Plato* by Eric Havelock.[1]

From the first rock thrower to the man who handles a bazooka, all are extending their physical bodies. Today, however, we not only extend our physical bodies, but we are literally casting our central nervous systems around the world as gigantic personal nets—fishing in the world-wide seas of information. While no one will quarrel with the concept that the structure of the eye governs our visual relationship to the world, many people find it difficult to understand that electronic media being, in each case, unique sensory extensions also structure our responses in unique ways.

At the point when the infant achieves the ability voluntarily to release his grip he achieves the ability to speak. Speech is the result of inhibitory factors in

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1—Eric Havelock—*Preface to Plato*—Harvard, 1963 the brain which allow for the chaneling of specific thoughts and sensory responses through the turmoil of mental activity which goes on all the time. In much the same way, phonetic writing demands inhibitory factors. It forces us out of the resounding oral world into the abstract visual by inhibiting responses from our other senses. Modes of writing such as the pictograph or the hieroglyph do not have this capacity for translating the oral into the abstract visual. Where the Egyptian hieroglyph does make an individual picture stand for a sound, it is, of course, on the brink of the complete phonetic mode. The phonetic alphabet since its beginnings in the syllabic Linear B from Mycenae and Knossos was potentially capable of disintegrating the closely woven network of interrelationship within the tribe. The tribal entity, a concomitant of unified sensibility and corporate awareness, could not long bear up against the fragmentation of the visual bias in communication.

In addition to the assumption that one equates the quality of a medium with its contents there is another postulate to which we in our society adhere. This is, that the higher the definition, the greater the communication. If, for example, an object is well lighted we feel that communication is at its highest point; if sound is in "hi fi" we assume that we are getting the maximum from the experience. It is well to realize, however, that high definition information fosters detachment, reliance on a single sense and dispassionate survey. Low definition communication, on the other hand, forces high involvement because it demands fill-in from the other senses not included in the experience; the ear is immediately reinforced by the searching eye whenever an unidentifiable (low definition) sound is heard; or the nose or hand will be invoked to provide an experience which is meaningful in terms of prior experience. When the communication is low in data, the interplay or interface of the senses is greatly enhanced. TV, for example, while feeding in low-resolution visual data, forces us to supplement with tactile re-membering.

A recent series of experiments was carried out on rats making their way through a maze. When the rats were offered a final reward, they learned to make their way through the labyrinth quite successfully. However, if they were fed in the course of the experiment it was discovered that they lost their sense of orientation towards the future—they simply enjoyed the present reward. Especially since the eighteenth century, education has stressed the concept of the ultimate goal with few rewards during the process of learning. Is it possible that the lack of perspective which has been increasingly noted among our teenagers, the tendency to ignore future goals for the "nowness of now" is a direct result of the impact of the formal structure of TV? For this low-definition medium with its heavy demand for sensory fill-in, has, in addition, an incomparable capacity for making all times now and all spaces here. The future no longer lies ahead, it is right here in the present, along with the past. In addition to the elision of time our electronic media have, in effect, reduced the spaces of our world to the dimensions of a tribal unit. When Khrushchev pounded his shoe, our world village was instantly aware of the reverberations of the tribal drum.

The artifacts of any culture are an all-inclusive inventory of the sensory ratios which were in effect when they were produced. Perhaps the ultimate polarity is the illustration and the icon. An illustration is a visual description of an event in a single three-dimensional space seen from one point of view. It is a result of the ability of Renaissance man to arbitrarily fragment space and time. It can be seen to be a product of literacy as far back as the culture of Knossos about 1400 B.C. It did not fully develop into highly visual picture-making until Gutenberg started the presses of Europe in the fifteenth century. If we enumerate the primary modes of Renaissance painting, the visual bias becomes very apparent: perspective is something which can only be seen and depends upon a single point of view; *chiaroscuro*, used by painters to describe the tonal modelling of objects, is in the same category; the atmospheric effects of those last of the Renaissance painters, the Impressionists, were also exclusively visual. It is not strange that the only culture which fully developed this type of art was that of Western Europe, because Western Europe is the only society which managed to translate the world of sound, touch, taste and smell into the single sense of sight. Alex Leighton has said: "to the blind all things are sudden" thereby raising into conscious thought the idea that to the sighted man, nothing is sudden. The man with the visual bias has perspective, connected spaces and the desire to see ahead.

The icon came out of the Middle Ages where communication was predominantly oral rather than written. Leonardo da Vinci said: "Seeing is believing" but he neglected to add the end of the saying which is medieval: "but to touch is the word of God." So it was to the people of the Middle Ages; so it was that their images were of things as known, not of things as seen. For touch is the most synaesthetic sense—the one which most involves all the others. These iconic images were the result of total sensory awareness. The man who lived in an aural world lived at the centre of a reverberating sphere where communication was simultaneous and from all directions. The sensory biases of the culture were sound and tactility. This is in contradistinction to the visually biased man who views from a single position and must look in one direction at a time. The object as known is never known from a single point of view, therefore the two dimensional plane is chosen as it allows for the multi-dimensional. The three-dimensional illusion, on the other hand, is a *cul de sac* allowing only for a single, visually unified space.

Electric immediacy moves us into the world of the icon and away from the world of the illustration. The efficacy of the illustration—the visually orientated, naturalistic painting—began to fade in 1842 with the advent of telegraphy. For this first electric method of fast communication broke down the previous assumption of connected spaces. Its ultimate effect in the area of painting was to largely eliminate the three-dimensional which was predicated upon the interconnection of spaces. By this I do not wish to merely infer that the iconic mode today supersedes the illustration in the area of the visual arts but that the mode of organization of the icon, its spatial and temporal concepts are becoming increasingly apparent in our life generally and manifest themselves in such diverse areas as corporate structure, town planning and merchandising.

When a primitive makes a mask he does not make a work of art. He makes a piece of technology for the control of environment. It was only in the Renaissance that art ceased to be a part of environment and became simply an object isolated and valued for its esthetic appeal. I am very sure that the art objects of today (those that are truly twentieth century) are devices for the control of environment. For, just as the masks of the primitives controlled the environment by making manifest the tribal myths, so the arts of today make palpable the myths inherent in our own misunderstood technological wilderness.

This then raises an important point: are the media themselves tools for environmental control? Insofar as they are twentieth century art works, they are. But what is the essence of their power as tools? Here I think that the literate man is liable to make a mistake and to attribute the power of the media to its content. Marshall McLuhan has said: "Many people assume that it is the content whether of the sung word, the spoken word or the written word that matters. Such an assumption, of course, diverts attention away from the notes in which it is sung." In *Understanding Media*[2] we encounter illuminating insight into the whole problem of the interaction of the forms of media and sensory response.

The Renaissance was biased in the direction of the eye in isolation. We are now entering an era where sound and touch are achieving primacy. Such a re-organization of our sensory life is as shattering to our social organizations as the sensory-re-orientation of the Renaissance was to Medieval society. What is not sufficiently understood is that the media can silently impose their assumptions, postulates on which we base our understanding of the world. So it is that the powers the media possess must be sought in the unique form of the media themselves.

In the field of print technology, re-processed by the feed-back from TV, we can anticipate a radical change toward the iconographic. There will be an increasing use of phototype and other distorting devices to move the written word closer to its sound and feeling. There will be an increasing use of glosses and headlines in an attempt to treat leading thoughts as nodal points. The first timid gesture toward typographic iconography of the new Pitman alphabet will bear fruit in a highly developed cluster-like use of the alphabetic symbols themselves.

2—H. M. McLuhan—*Understanding Media*—McGraw-Hill, 1964

All this is part of the movement away from the fragmentation and specialism of the traditional literate mode and toward the unified iconographic with its tremendous and as yet unexploited potential for environmental understanding and control.

ARCHITECTURE AND THE CORPORATE IMAGE

Allen Bernholtz

Without the specific awareness of sensory modes as including more than the merely visual, it becomes difficult to understand the principle of synaesthesia. The visual orientation is only one of many modalities while synaesthesia is the corporate sense, the cluster configuration of our sensory mix. Through the organic interplay of our senses we can increase and extend the range of our experiences and awareness of the world. Western civilization, since the Renaissance, has concentrated on the visual experience to the detriment of the other organs of perception. Yet architectural space can be structured by ear, nose, hand, and muscle as well as by eye. And in the case of touch at least, man assumes a much more active role. Active touch is basic to our three-dimensional conception of the world. As children, we structure our world through an interplay of all our perceptive organs. Our sensation of space is modified by touching, walking, texture, shade, temperature, sun, shadow—in fact, by any number of ways through which it is possible for the human organism to construct its world.

Architecture as indicator of past, present and future is the visible product of man's imagination, the great handwriting of the human race, as Hugo maintained. The visible portrait of the collective identity of mankind emerges as a series of shapes marking time. The image of the corporate self is the mask presented to posterity through the mirror of Architecture. Entire epochs speak through that corporate image.

Architecture serves as archetypal forms of human concern. The architectural world has today become a war of forms or icons reflecting the corporate agitation, insecurity and transitional quality of our century. Image after image is put forward by architects and planners attempting to capture the illusive involvement of an age—the reflection of a way of life. The panic of our streets, cities, and highways suggests the corporate mask of an age of anxiety. The alienation of man and his technology is everywhere apparent in the surrounding chaos.

Architecture can be interpreted as a corporate presentation of the values of a given society to itself. Man creates his own environment and then addresses himself through it. The class patterns of a community, the variety and extent of its relationships are functions of the created spatial environment.

The office building arose as a specialized form of vertical human filing case for a centralized bureaucracy. As such, it served a specialist, fragmented function, in keeping with assembly-line techniques. But its function has been extended to incorporate all the facilities for socialization and interaction previously reserved for the club and the home. Women in North America find their mates, as Hugh Dalziel Duncan has suggested, not where they live, but where they work. A colleague in work, dressed to the teeth, an understanding helpmate ready to meet any emergency is the role of the secretary, not the wife.

Architecture, designed, advertised and distributed as mass symbol, reflects the collective mask of contemporary society.

To complement our corporate image, we are today manufacturing a phantasmagoria of neon tubes, garish billboards and flashing signals which embellish our streets. But even the superficial and commonplace, to be appreciated, must be available in moderation.

Of all the arts, architecture, Wyndham Lewis has suggested, is most dependent on the collective sensibility of a period. Where it should be our strongest form-giver, it is, because of the diversity of its inclusive role, most often the weakest. Seldom does architecture approach the efficient evolution of the animal kingdom, or, for that matter, of the engineered process. But its role is more complex than either of these.

Initially architects must realize that perspective is the private point of view in architecture. The role of form-giver cannot, in the collective, corporate world of electronic, unified, integral technology, derive from the private point of view.

Today's corporate image manifests itself as a vital force emanating from the potentialities of an electronic world. The vital force of a civilization has no free existence of its own, but requires an external form through which the aspirations of society can make an appearance, that is, through our architecture and planning. The image conveyed is the visible product of our experience in technical knowledge, ritual organization and symbolic content of expressive forms.

As the cartoon creation and "pop" art call for sensory interplay rather than separation and lineal sequence, so transparency, tactility, acoustic space, the breaking down of the rigid partition system, call into play the creative act of completion and participation on the audience's part.

Our structures communicate to us through non-verbal clues the status, prestige, taste and values of those who use, construct or own them.

Architecture, like a system of ideograms, is unable to handle concepts or present doctrines discursively. As such, a building does not fix a notion with a definite degree of abstraction or generality, but evokes a profusion of images unsuited to formal precision. (The "icon" is all things to all men.)

The role of house as extension of man's bodily control and temperature regulating device—a further extension of clothes—becomes tenuous with the coming of automatically controlled and regulated atmospheres. But as corporate mask, the house is essentially a form of feedback, the portrayal of man to himself. In this connection, the city as centralized gathering together of all of man's potential for exchange and interaction is questionable. As Richard Meier has stated, only the face-to-face aspect of cities maintains their structures today.

Architecture freezes for a moment the essence of things in their characteristic life of movement, creating patterns of living order at momentarily arrested cross-sections of history.

Corbusier's Ronchamp chapel reflects a transformation into a new form of spatial awareness, creating a unique 20th century image. What is the pattern of a society which reverses all previous order by making the centre of the ceiling the lowest point?

Surely a new organ of corporate awareness comes into being with this inversion. Architecture, as has been said, is the rhetoric of structures laying bare the imagination of a people and creating pattern out of chaos.

Recently developed devices for measuring sensory awareness give us, for the first time in history, an objective means of quantifying our spatial patterning. The potential for the architect as form-enunciator is unparalleled.

AUSTRALOPITHECUS AND THE ELECTRONIC BRAIN

Wilfred Watson

Whatever value Robert Ardry's *African Genesis* (New York, 1961; paperback edition, Delta Books, 1963) may have as anthropology, it possesses striking mythopoetic significance. Sub-titled "A personal investigation into the animal origins and nature of man", it could be called the Book of Cain, for in Robert Ardry's myth of man's origin Cain substitutes for Adam. Lacking only a "single evolutionary advance—enlargement of brain and consequent flattening of face—to project him across the human threshold," the Cain of this myth stands for one of two related species of terrestrial ape which flourished in Africa from Kenya to the Transvaal some ten million years ago and acquiring "human carriage, human buttocks, human feet, and the human loss of fighting canines" became the first carnivorous primate, the first creature to make tools and weapons and the immediate ancestor of man.

Robert Ardry's myth of the development of man implies three crucial transformations. The first occurred when the ancestors of *Australopithecus robustus* and *Australopithecus africanus* ceased to be arboreal and becoming terrestrial acquired human buttocks, upright stature and two free hands. The second transformation occurred when *Australopithecus* became carnivorous and learned to use bones, stones and sticks as tools and weapons and collected them and prepared them for use. The third transformation happened when a fully-developed carnivorous weapon-making *Australopithecus africanus* acquired, perhaps through genetic mutation, a brain three times the size of the australopithecine organ. The new creature was the first man.

It is with the second of these transformations that Robert Ardry seems most concerned. It pleases him to think that the human brain wasn't the product of tool-and-weapon-making and that it wasn't necessary for the evolutionary process to produce a human-sized brain before it could produce a tool-and-weapon-making primate. For Ardry in fact the human brain is something of a sport—it only occurs, Ardry notes, millions of years after *Australopithecus africanus* had first learned to make weapons. During a period of seventy million years, Ardry declares,

> brain development had been the focus of primate experiment, yet mutation and natural selection had combined to produce no brain larger than a pint measure.

But then with relative suddenness, "in a space of time no greater than an evolutionary flicker, the brain very nearly trebled in size, and a creature called man walked the earth." In Ardry's myth then of the animal that changed its evolutionary role by means of a cultural acquisition, the human brain lacks a *raison d'être.* It just happened. Its sudden appearance has all the inexplicability of a miracle. The Ardryan myth however is an apocalyptic one. "It is difficult," Ardry says, "to describe the invention of the radiant weapon"—the atomic bomb—"as anything but the consummation of a species." The enlarged human brain which by inventing the bomb will bring about this culmination of our species, Ardry hints prophetically, may produce the radiation to cause new genetic mutations by means of which we shall be able to renew ourselves. This is mankind's "last best hope."

2 But it is not hard to see, granted Ardry's premises, what necessitated the human brain. As long as *Australopithecus africanus* developed only very simple tools and weapons, the lethal power of this carnivorous primate wouldn't have added much to the problem of Australopithecine mortality—at least, here would have been no greater problem than the lethal power of the lion, though, as Ardry himself points out, one of the major causes of lion mortality has always been the lion. But the lethality of the lion doesn't increase because it is genetically controlled. Not so the lethality of *Australopithecus africanus*, once it had added to "primate wits" of a very high order "the primate tradition of the social instrument", that is to say, weapon of bone or stone. The lethality of the carnivorous weapon-making primate must have been proportionate to his weapons and his techniques, however simple these might seem to us today. New weapons or new techniques must have been a major threat to the species. If the Australopithecine brain had been of use only to increase the lethality of this primate, increase in brain size would have been fatal for the species since the margin of safety in this respect was so slender. Of course, *Australopithecus* developed weapon culture at an incredibly slow rate. Every new development must have endangered the very existence of the species.

There is only one condition under which the human brain, three times the size of the South African carnivorous ape's brain, could have survived, and that condition is, it had to be dominantly and effectively anti-lethal. True, it was bound to be used for the purposes of group violence since its possessor lived by hunting and since the human body has few advantages of defence against other predators. But the enlarged brain's major function must have been to oppose the suicidal use of weaponry against other members of the species. It seems likely that it was developed or if it appeared as a mutation that it was adopted primarily as a *brake* against the lethal hunting instinct which to succeed had to act suddenly and unreflectively. It would seem likely that its delaying action operated through its control of the senses, the imagination and memory as sources of various sorts of information, an operation to be evidenced much later in primitive art, rituals, and magical cults, perhaps even religion. We may conclude that the original primary function of the human brain must have been as an inhibitor of the lethality that weapon culture afforded the species.

To some extent, of course, from the beginning the human brain must have been aware of a division in itself, of paradox and contradiction, for in the very act by which it functioned there must have been awareness of the instinctive need of the lethal part of its possessor to avail itself of the brain's total intelligence. Hence possibly arose the human love of irony, paradox and contradiction. And in resolving this division in itself, the enlarged human brain must have received some awareness of the dual nature of the primate possessing it. It must have been able to sense reflexively that its primary function of inhibiting lethality was more profoundly primitive that the secondary lethal function. This secondary function must have seemed like a temptation, an awareness later to be articulated as blood-guilt. We should remember that the older primate stock had been, except for *Australopithecus africanus* but not excepting *Australopithecus robustus*, exclusively non-carnivorous.

3 If we can credit this view of the *raison d'être* of the human brain, what Robert Ardry has to say about Cain's weaponry requires modification. Our history, Ardry says,

> reveals the development and contest of superior weapons as *Homo sapiens'* single, universal cultural preoccupation . . . mankind as a whole . . . has never allowed local failure to impede the progress of the weapon, its most significant cultural endowment.

It would be far more true to say that throughout mankind's long contest with weapons, whatever weapons man has developed, he has always found the means to civilize. If he has not been able to neutralize them without excessive cost, still he has prevented them from becoming the means of the destruction of society.

Today the fact of the atomic bomb makes prediction as to the future highly uncertain. The lethality of our species is at an all time high. It is doubtful whether at any time in the past more human effort has been devoted to the development of weapons. Yet we have still been conscious that there are two sorts of reason corresponding to the use of the brain for lethal purposes and to the use of the brain in its primary function of inhibiting lethal behaviour. This awareness is implicit in the historical opposition of reason and unreason, of the rational and the irrational. These terms have been used interchangeably so that this opposition has tended to obscure the real significance of the brain's primary and secondary functions. Our peril today lies in the fact that we have inherited an environment extremely unfavorable to the brain's primary function, which is delaying, sensing, remembering, frustrating action in every way. This environment, that of technology-centered society, could not have happened without some cause; and Professor H. M. McLuhan, when he asserts in *The Gutenberg Galaxy* that the invention of printing by isolating the visual sense split awareness in two with a resulting acceleration of technology, would seem to have found an adequate explanation of why the human brain has failed to prevent western civilization from increasing its lethality. The invention of new media in our own era may perhaps by inducing opposite effects once again restore to the brain its primary function. Indeed, all media are extensions of the brain's delaying function, even the medium of printing *which by itself alone* could produce, as Professor McLuhan argues, conditions making modern technology possible. The paradox of human weaponry and of the human brain, then, is much more complicated than Robert Ardry realises. It is true that the university may turn into a colossal weapon but it is equally true that an army may become a university. If there is danger of accident let us admit that the military mind loves safety catches.

Where we need caution is in seemingly innocent technological advances. We must remember that every technological advance increases our weapon-making potential and enhances the lethality-index of our species. No wonder the peaceful employment of atomic power frightens the insurance companies. A report made to the U.S. Congress in 1957 on "Financial Protection against Atomic Hazards" asserted that the "magnitude of public liability" in the peaceful employment of atomic power "is such that it cannot be covered by private insurance alone." Not only does technology produce a multiplicity of weaponry but it also increases the danger by engrossing the very brain which has for its prime function the restriction and nullification of the potential weapon.

The electric brain is a technological advance and as such is a weapon of the first order. It might therefore seem to mean a further increase in the hazard of human lethal power. Yet it could release human brains to their prime function of anti-lethality. This release, if it is linked with economic changes resulting from automation, will be bound to have a dislocating effect upon a civilization based, as Professor McLuhan writes, upon "the Gutenberg method of homogeneous segmentation". Indeed Robert Ardry's myth of the imminent extinction of man through the devastation of atomic warfare is probably powered by the fact that the

> new galaxy of events has already moved deeply into the Gutenberg galaxy. Even without collision, such co-existence of technologies and awareness brings trauma and tension to every living person.

If Ardry's book seems unbalanced the new intellectualism will seem to most of us like the height of unreason, irrational far beyond the behaviour of the most Ubu-esque art colony at its most extravagant moment. We can expect to see the undoing of efficiency. Science will lead the way. Research in the universities will convert into egghead fun. Art will transform into non-art and anti-art. Prose will reverse into poetry. Poetry will take on the function of reason. Perhaps the theatre of the absurd will wind up as a religion of the absurd. But our species will perhaps be using its magnificent brain properly for the first time in its long existence.

THE UNIVERSITY IN THE ELECTRIC AGE: THE END OF THE GAP BETWEEN THEORY AND PRACTICE

Marshall McLuhan

To judge from the presence of the higher learning in the Industrial, Military and Government establishments, it would be easy to suppose that the modern University had begun to poach and to encroach on areas and functions long immune to the harsh glare of intellectual scrutiny. It is not so long since F.D.R. raised a storm with his "Brains Trust." What a wealth of implication there was in that phrase when it was new. The very idea of trusting "brains" in the most crucial areas of practical affairs was an outrageously original idea in the 30's.

It was during this period that Winston Churchill was kept in deep freeze because of his supposed excess of intellectual energy and ability.

An even more harrowing implication of the Brains Trust idea of F.D.R. was that brains might become institutionalized in the very heart of the power complex. Brains might be incorporated into a Trust. This was all too familiar an image already gleaned from backward and totalitarian communities. In the 1930's, any move to assemble and concert teams of brainy characters was bound to resemble some form of centralist and collectivist Utopianism. The Second War eased that anxiety. War is a form of social revolution if only because it requires an acceleration of organized change. War means socialized planning at its maximum. Not only brains but the highest modes of specialized knowledge are needed in every sector of the war effort. To create and to use modern weaponry requires the most advanced data. The atomic bomb is weapon become environment. The bomb is the modern University in action. It is the University as a total world environment.

It would be a mistake to think of the bomb as a weapon contained within the military establishment. That would be the same kind of error as trying to imagine the University of today as the content of the industrial complex such as the University was in the nineteenth century. In the Age of Information when the entire political and industrial economy has become subordinate and even incidental to the processing, and packaging, and moving of data, the industrial and military and government establishments are no longer environmental. They have unexpectedly become the content of the University, just as the military establishment is now contained within the comprehensive environment of the bomb. Only Telstar presents the prospect of a new world environmental factor sufficient to contain the bomb. Telstar is as unmistakeably a University extension as the bomb itself.

Technologies are not only extensions of the human body and nervous system, but each tends to establish a new human environment. Be it script or wheel or clock or radio, each technology creates a new universe of discourse that encircles and includes earlier technologies. The content of the new environment is, most noticeably, the immediately preceding technology. Movies are the content of the new TV environment as book and stage and press had become the content of the movie environment. As each older technology is environed by a new one, the older one is strangely transformed. But even more significantly, the new environment, with all its unique ground rules and variables, exists as invisible and unnoticeable.

That throughout the history of human affairs the decisive innovational factors should enjoy a state of complete camouflage, is not without explanatory value. The protective inhibitions by which our sensory and psychic lives cushion the impact of intense environments, might have persisted indefinitely except for the advent of electric technology. With this event our nerves became our technological environment, our new universe of discourse. The only protection left was the study and programming of the environments themselves. The situation in which we currently exist with nerves exposed, both privately and corporately, is not one in which we are inclined to be deceived by the content of this unprecedented nervous environment. That is to say, previous cultures have shown awareness only of the content of their technologies. The content is always the previous technologies, with prime stress on the immediately preceding one.

When the industrial and mechanical environment was new in the later eighteenth century, the content of that new environment was Nature and the handicrafts that had constituted the previous environment. The new technology tends to process the older ones into art forms. The new one appears untidy and dishevelled, and is usually regarded as a source of degradation and corruption. Thus the industrial technology was felt to be spreading ugliness and horror while Nature was being discovered for the first time as an immediate source of spiritual beauty. When electric technology first environed the industrial world the mechanical forms began to be regarded as art forms. Abstract art and Futurism offered the world of industrial engineering for esthetic contemplation. By the same token, Gutenberg provided a new technological environment which took over the medieval world as its content. The subsequent tidying up resulted in a discovery of "the medieval world picture" such as had been quite lacking to the middle ages.

So long as the components of a situation are constitutive of the cultural climate or environment, that environment remains invisible. The first exception would seem to be the electric environment with its circuitry and its "feedback." When modern science began to regard the very instruments of research as distorters of the evidence, we had reached the stage of awareness of the action of the self-imposed environment as such. At this point it became possible to diagnose the human failures to discern the psychic and social consequences of our own inventiveness.

It was Percy Wyndham Lewis in *The Diabolical Principle* who argued that only art should be permitted to be environmental. To allow the human environment, with its immediate action on our perceptual modes, to be fashioned by haphazard technologies, seemed to Lewis to be madness. He was fully aware of the merely automatic process by which successive new technologies turned the older ones into obtrusive art forms. He offered the example of the fox-hunter. Primitive man, the food-gatherer, was succeeded by men who specialized in various crafts from crops to pots and baskets. In this specialist world, the older technology of the hunter emerged as a game and as an art form laden with a snobbish aura. Lewis saw that this fate might overtake the arts as such. They could become the natural prey of wealthy persons of leisure. For snobbish reasons, the arts might be reduced to the status of the toys and become the content of a new technological world.

Primitive man had no art. His dancing, his masks, his carving had only the most intense and serious of purposes, namely to keep the universe in good condition. There was no "content" in this magical activity. It was direct programming of the cosmic environment. Our modern science tends strongly towards the same inclusive role as that of earlier magic.

If the University today has become environmental in the full sense of providing the universe of discourse for all human affairs, it could also be said that the university has become the perceptual organs of society. The nineteenth century university that had served to process the young for an industrial age is still the content of the new university. The university as a processing plant for the young is undergoing the usual transformation that the environmental inflicts upon its content. The older university, with its fragmented curriculum, its time tables, its staff and its students, is being bureaucratized or tidied up into an art form. It is this older university that occurs on a massive scale in the operation of the military and governmental establishments, as shown in the studies of Clark and Sloan. Meantime the new university, the environmental one, remains imperceptible like all environments. The new university has neither curriculum, nor staff, nor students. It is an extensive dialogue that has begun on the highest planes of knowledge and affairs, the intent of which dialogue is the unification of knowledge.

What if the older university, the processing plant for the young of a mechanized society, were to be programmed in accordance with the new electric technology? There would be no curriculum in the present sense. There would be no subjects. Eric Havelock in his *Preface to Plato* explains how the present ways of organizing knowledge in the Western world began. Based on script, we have developed a system of classified data and ideas. The pursuit of depth in a world of classified data must necessarily take the form of fragmentation and specialism.

One science only will one genius fit,
So vast is art, so narrow human wit.

With the electric processing of data, classification yields to patterns, sets, gestalts. When electric circuitry succeeds the mechanical wheel, the integration of work and learning alike results in joblessness and integral awareness. The job, that is, was a fragmented form of work, even as the subject is a fragmented form of knowledge. Neither job nor subject can co-exist with electric technology. Work now tends to assume the character of involvement or the use of all the faculties and learning moves towards the mode of insight and interplay of knowledge.

In the subtitle of this essay is the phrase: "the end of the gap between theory and practice." The Oriental when viewing the West has often said of us: "You are always getting ready to live." The Oriental has been baffled by our determination to tool up our lives in order to translate one kind of material or energy into another. This is what we refer to as the process of applied knowledge. Today, in the Age of Information, all materials and energy tend to become a form of programmed knowledge. The process of translation, or application, has become easy. The real work now consists in doing something else, namely imagining the present in all its depth. The power of the imaginative grasp of the present seems to have belonged only to artists till now. That is why they seem to have been "ahead of their time." But their power to seize their own time in depth is also accompanied by a vision of the unused possibilities of their time. They are often inclined to refashion the sensory life of their age as if they were the Life Force providing D.N.A. particles with new programs. Indeed it is not misleading to envisage the artist as Life Force so far as inventing new sensory environments and ground rules is concerned. If new technology is very much in the order of biological extension and mutation, the artist is not without his role in orchestrating such change with the orderly needs of our sensory life. Without this orchestration of established sensory modes with new technological environments, man undergoes progressive alienation from himself. New patterns of input of experience merely clog the doors of perception.

As the highest learning of the university increasingly constitutes the world environment of Information, it becomes possible to imagine the means, not merely of order in the content of experience, but in the very environment or ground rules of experience. Instead of putting works of art before ourselves for attention, it is now possible to fashion the environment itself as a work of art. That means we can begin to arrange the sensory life in order to maximize awareness and learning. By becoming a world environment, the university has created a situation that calls for the shaping of the total environment as subordinated to the optimizing of the human dialogue and community.